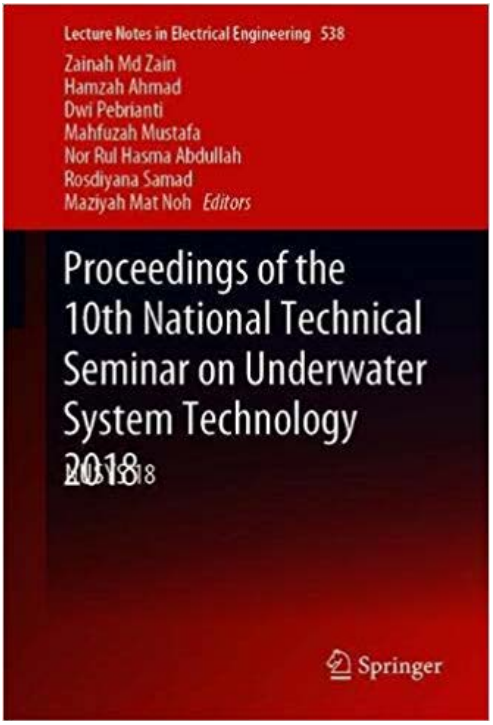

Proceedings of the 10th National Technical Seminar on Underwater System Technology 2018

NUSYS'18

Editors: **Md Zain**, Z., **Ahmad**, H., **Pebrianti**, d., **Mustafa**, M., **Abdullah**, N.R.H., **Samad**, R., **Mat Noh**, M. (Eds.)

ISSN 2194-5357 ISSN 2194-5365 (electronic)
Advances in Intelligent Systems and Computing
ISBN 978-3-030-00978-6 ISBN 978-3-030-00979-3 (eBook)
https://doi.org/10.1007/978-3-030-00979-3

Library of Congress Control Number: 2018955576

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Contents

Classification of Transient Facial Wrinkle

Rosdiyana Samad, Mohammad Zarif Rosli, Nor Rul Hasma Abdullah, Mahfuzah Mustafa, Dwi Pebrianti and Nurul Hazlina Noordin

Abstract Classification of transient wrinkle is an important application in research related to the skin aging, facial expression and skin analysis. Many researches have been done in the detection or classification of wrinkle, but it still needs some improvement in the algorithms, either in feature extraction part or classification. In this study, classification of transient wrinkle is proposed by using wrinkle features that extracted from the combination algorithms of Gabor wavelet and Canny operator. The facial wrinkle features are then classified by using artificial intelligent method which are Artificial Neural Network (ANN) and K-Nearest Neighbors (KNN). These two classifiers are trained and tested, and then the performance of each classifier is compared to getting the higher accuracy. 130 face images from various sources are used in the experiments, 65 of the total face images contains wrinkles on the forehead. The results show that ANN classifier only achieves 96.67% accuracy, while the KNN classifier obtained the highest accuracy with 100%. The comparison demonstrates that KNN works well in this classification. This result also proved that the extraction of facial wrinkle using a combination of Gabor and Canny detector is successful.

Keywords Facial wrinkle · Gabor wavelet · K-nearest neighbor · Classification

1 Introduction

Researchers have developed numerous algorithms for extracting the information from the human face to be used for the computer vision application. This is because the human face conveys considerable amount of non-verbal information such as gender, age, expression, etc. [1]. One of the representative feature of face that can be obtained from face image is a wrinkle features, which can be cooperated in image-

R. Samad (✉) · M. Z. Rosli · N. R. H. Abdullah · M. Mustafa · D. Pebrianti · N. H. Noordin
Faculty of Electrical and Electronics Engineering, Universiti Malaysia Pahang, 26600 Pekan, Pahang, Malaysia
e-mail: rosdiyana@ump.edu.my

Z. Md Zain et al. (eds.), *Proceedings of the 10th National Technical Seminar on Underwater System Technology 2018*, Lecture Notes in Electrical Engineering 538,
https://doi.org/10.1007/978-981-13-3708-6_34